WHAT IS CLAIMED IS:

1. A support for an array of fluorescently labeled samples comprising a transparent body defining:

(a) an array-support surface and

(b) under the support surface, in spaced apart relationship thereto, a field of embedded optical features exposed to be illuminated by a broad light beam of excitation radiation addressed to the support from a predetermined general direction selected to produce a surface wave effect at said support surface, the field of embedded optical features and the support being so constructed that light of the beam incident on the features is launched through the support at an angle to said support surface that produces said surface wave effect of radiation in the manner that it can produce fluorescence from the labeled samples to be imaged beyond said support from a direction different from the direction of said illumination.

2. The support of claim 1 in which said support surface is planar.

3. The support of claim 1 or 2 substantially in the form of a microscope slide, e.g. with length 75 mm, width 25 mm, and thickness of 1mm or a few mm.

4. The support of any of the claims 1-3 in which said support surface defines a wetted surface of a flow cell, the flow cell having a window for viewing fluorescence from said support surface.

5. The support of any of the claims 1-4 in which said embedded optical features are exposed for illumination by a beam directed toward the side of the support opposite from the array-supporting surface.

6. The support of claim 5 in which said embedded optical features comprise transmissive facets disposed at an angle to the array-support surface and substantially at right angles to the general direction of the selected beam.

7. The support of claim 6 in which said angle of said beam lies between about 30 and 60 degrees to the normal to said array-support surface.

8. The support of claim 7 in which said angle of said beam lies between about 38 to 44 degrees to said normal.

9. The support of any of the claims 6-8 in which said optical features are defined by sides of triangular grooves.

10. The support of claim 5 associated with an imager having an axis normal to the support and in which said optical features define a diffraction grating arranged to receive an illuminating beam at an angle substantially less than perpendicular to said support surface, e.g. at an angle of 10 or 15 degrees to normal.

11. The support of any of the claims 1-4 in which said embedded optical features comprise reflective surfaces exposed for illumination by a beam directed toward said support surface.

12. The support of claim 11 in which said reflective surfaces are defined by sides of triangular grooves.

13. The support of any of the foregoing claims in which said optical features are so defined and arranged in a pattern to accomodate variations in the critical angle of said array-support surface attributable to variations in the geometry or in the substance of said support and its support surface.

14. The support of any of the foregoing claims wherein the body of said support is substantially comprised of disposable plastic.

15. The support of claim 14 in which said disposable plastic is polystyrene, PMMA or polycarbonate.

16. The support of any of the foregoing claims wherein said embedded optical features comprise features of an article cast of molten material in a mold.

17. The support of any of the foregoing claims 1-15 wherein said embedded optical features comprise features that are embossed or press-molded.

18. The support of any of the foregoing claims having a plurality of coatings or layers along said array-support surface, the array-support surface comprising a layer of a substance capable of adhering to the adjacent lower substance of the support and to the samples.

19. The support of claim 18 in which said outer layer comprises polystyrene.

20. The support of any of the foregoing claims having a plurality of coatings or layers along said support surface that define a wave guide along that surface.

21. The support of any of the foregoing claims having reflective or transmissive embedded optical features, said support surface being adapted to receive samples of a predetermined minium spot size, the size and periodicity of said features being in the range of about 1/4 th to 1/50th said spot size.

22. The support of claim 21 wherein said size and periodicity is of the order of 1/10th said spot size.

23. The support of any of the foregoing claims in which the portion of the array support surface on which said array of samples will reside lies directly opposite to the field of embedded optical features under said surface.

24. The support of any of the foregoing claims carrying energy references.

25. The support of claim 24 in which the array-receiving area of said array-support surface is defined as a matrix of localized regions, at least one energy reference being associated with each of said localized regions.

26. The support of claim 24 or 25 in which at least some of said energy references comprise Kapton.

27. The support of claim 24 or 25 in which at least some of said energy references comprise labeled biological material.

28. The support of claim 24 or 25 in which at least some of said energy references comprise a selected glass or quartz.

29. The support of any of the foregoing claims constructed to launch an evanescent wave along said array-support surface.

30. The support of any of the foregoing claims constructed to guide one or more wave modes along said support surface.

31. The support of any of the foregoing claims constructed to cause the sample spots to function as Fabry Perot cavities during their absorption of energy.

32. The support of any of the foregoing claims carrying an array of sample spots.

33. The support of claim 32 wherein the sample spots are fluorescently labeled spots of biological material.

34. The support of claim 32 or 33 wherein the sample spots are of size between about 50 and 500 micron.

35. The support of claim 34 in which said embedded optical features are transmissive or reflective and have a size and periodicity of between about 1 and 50 micron.

36. The support of any of the claims 32-35 in which the spots have shape determined by being deposited as fluid spots from which liquid carrier has evaporated.

37. The support of claim 36 in which said spots are pin-deposited spots.

38. The support of claim 36 or 37 in which energy references associated with the sample spots comprise spots the shape of which has been determined by being deposited as fluid spots from which liquid carrier has evaporated.

39. The support of any of the foregoing claims disposed at an illumination and imaging station.

40. The support of claim 39 in which the imaging station includes a wide angle imaging system.

41. The support of claim 40 in which the imaging system is constructed to image an array area of about 15mm by 15mm.

42. The support of claim 41 in which the support is constructed of the general size and shape of a microscope slide, and said array-support area defines two areas to be imaged, each area of about 15 x 15 mm, and each associated with its respective field of said embedded optical features.

43. The support of claim 39, 40, 41, or 42 in which said imaging station comprises a stationary CCD camera.

44. The support of claim 43 in which said camera has a resolution of about 612 x 612 pixels.

45. The support of any of the foregoing claims in which an imaging system is arranged over the array-support surface of the support and having a viewing axis normal to said surface.

46. The support of any of the claims 39-45 associated with a mirror constructed to operate with a broad beam light source, the mirror sized to direct the beam from the light source toward said support in a manner that the field of embedded optical features launch the radiation at said angle to said support surface.

47. The support of claim 46 associated with a tilt control mechanism capable of receiving tilt angle signals from a controlling computer and to direct the beam to said support, or move the support relative to the beam, at the commanded angles.

48. The support of claim 47 in which the tilt control mechanism has a range to change the angle of the beam reaching the support surface by about 30 degrees.

49. The support of claim 47 or 48 associated with a driver comprising a stepper motor and an elastic motion divider.

50. The support of claim 49 in which the stepper motor is a rotary stepper motor, and the elastic motion divider comprises a weak torsion spring driven by the rotary stepper motor, the weak spring driving a relatively stiff elastic torsional resistance, the mirror or support mounted in the region generally between the weak torsional spring and the torsional resistance so that the mirror is deflected by an angle substantially less than 10 % of each step of the stepper motor, for example 1/50th or 1/80th of the step.

51. The support of any of the claims 48-50 in which the mirror or the support is adapted to advance in steps of the order of 0.1 milliradian.

52. The support of any of the foregoing claims associated with an imaging system adapted to acquire a series of images (for example 5 or more, e.g. 10 or even 20) over an

angular range of illumination of the support, and to determine the results of imaging by comparing data obtained in each image.

53. The support of claim 52 in which the support carries energy references, and said comparison is based on the imaged results of those references at the various angles of illumination.

54. The support of claim 53 in which the support carries a matrix of energy references distributed over the image area, and localized regions for the final image are selected based upon the imaged results of references associated with localized regions in the respective images of the set, and a final image comprises a quilt formed of localized portions of the images selected from said set of images, or the sum of two or more localized portions.

55. The support of any of the foregoing claims in which the light source produces at the support at least a quasi-collimated beam, i.e. a beam of nor more than 5 degrees convergence or divergence.

56. The support of claim 55 in which the beam has no more than about 2 degrees convergence or divergence.

57. The support of claim 55 or 56 in which the light source comprises at least one array of light emitting diodes.

58. The support of any of the foregoing claim 1-54 in which the beam is substantially collimated and the light source comprises at least one laser.

59. The support of any of the foregoing claims in which the light source comprises a multiplicity of selectable light source units whose outputs are merged into a single path leading to a mirror that directs the light to the support.

60. The support of any of the foregoing claims having a matrix of energy references associated with the array support surface, and an imaging system adapted to produce image data normalized with respect to sensed results at said energy references.

61. A fluoresence imaging system based on illumination of an array of samples by a surface wave effect, including an imaging system constructed to image the array over a set of small angular increments and to produce a final image based upon selection of localized regions from various images to comprise a quilt image, the selection based upon the response in the various images of energy references distributed over the array support surface, as by selecting the "best" signal to noise reatio image for each localized region or by adding images or localized regions of images at selected adjacent angles that have favorable signal to noise ratios.

62. A computer program recorded in tangible form adapted to form the quilt image of claim 61 based upon the said comparison.

63. The compuuter program of claim 62 adapted to evaluate the response of energy references of each of a set of localized regions comprising an image, and to select the localized regions of the set of images for which the responses of the associated energy references are best according to a given criteria.

64. A motion reducer comprising a rotary stepper motor, a weak torsional spring driven by the stepper motor, and a relatively stiff torsional resistance driven by said weak torsional spring,